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Name: Process and apparatus for the surface treatment of curtain rail boards

Applicant: Cech, Vladislav, 8031 Puchheim

Named as Inventor: The inventor is the applicant

8031 Puchheim bei München
Wettersteinstraße 2
Telefon: 87 82 72
(8 34 13 72)
on April 16, 1971
c 271 Ke/Ce

Patent Attorney
Dipl.-Ing. WOLFGANG KERN

Vladislav Cech
8031 Puchheim – Ort
Augsburger Straße 1

"Process and apparatus for the surface treatment of curtain rail boards"

The invention is concerned with a process for the surface treatment of curtain rail board made of metal or similar material that encompass at least one curtain run rail, with which specifically the visible rail surface in which the curtain gliders are guided, and which is proceeding parallel to the ceiling of a room, are smoothened and/or treated with paint. Furthermore, the invention is also concerned with an apparatus for the execution of said process.

Curtain rail boards that consist, for example, of aluminum, and that are very often created in the shape of a profile body, are commonly painted with a desired shade of color in order to correlate curtain rail board surface that is visible following its installation at the ceiling of a room with the color of the room ceiling or that of the curtains. The painting requires that the metal surface will be cleaned and degreased thoroughly prior to the execution of said painting process because of the fact that otherwise said paint would not adhere very well to said curtain rail board. However, these processing steps are involved and connected with rather high costs because of the fact that it is commonly required to execute them manually by hand.

It was proved to be of further disadvantage that during the color application process that is conducted by means of spray painting, not only the curtain rail board that was meant to be painted will be coated with such paint, but also the rail runs that are located in this surface. This results in the problem that the later inserted curtain gliders need to overcome a relatively high friction resistance during the opening and closing process of the curtains attached to them. In order to overcome said disadvantage, it seems to be reasonable to mask said curtain run rails prior to the painting of the surface with masking tape. However, this results in the problem that a section of the surface will not receive a paint coating because of the fact that the groove that creates the rail run is covered at both sides on the curtain rail board with masking tape. Following the removal of that tape subsequent to the painting process, one can observe that a line like

section along the curtain run rail is not coated with paint. Furthermore, the correct application of said masking tape across the curtain run rail, as well as the subsequent removal of said tape, is labor intensive, and thus, these processes are costly operations that should be avoided whenever possible.

Because of these facts, the scope of the invention is to provide a process for the surface treatment of curtain rail boards that does not possess the above mentioned disadvantages, and that furthermore will not created any soiling by means of paint application onto the surfaces that are to be kept free from any paint coating, and that said process can be executed anywhere at any time without any special equipment, and can even be utilized with curtain rail boards that are already attached to the room ceiling, and that are not yet painted, and said treatment will not require any post treatments of the surfaces that were treated in this manner.

According to the invention, this will be achieved in such a manner that the curtain rail board is laminated with an adhesive tape that is coated with adhesives on one side only that is applied in parallel to the curtain run rail, or the run rails that are positioned in the curtain rail board, and that said adhesive tape will be applied onto the strip like rail surfaces to each side of each of the curtain run rails. Herewith, the width of the laminating tape is identical to the width of the surface strip.

The application of laminating tapes of such kind will not require any preparation to the application surface, except the commonly executed removal of larger soiling, and it also will not cause any negative influence to the ambient area of the work place, for example due to solvent vapors or soiling caused by painting, such as they cannot be avoided during spray painting operations of the rail surfaces. Because of the fact that the required needed laminating tapes are available in film form in the desired colors, in which they appear following the processing of said laminating tapes as coverings for the curtain rail boards, it is herewith easy to make a color selection. Furthermore, herewith it is also possible to adjust the width of said tape in such a manner that they exactly correlate with the width of the surface of said curtain rail boards. Because of these facts, the surface strips of the curtain rail boards will be cleanly covered up to both sides of the curtain run rails during the laminating process if the laminating tapes are applied accurately during the application process.

It is furthermore possible to extend the process in such a way that the parallel surface strips of the curtain rail boards that can be separated from each other by a single or multiple curtain run rails can be laminated at the same time with said laminating tapes, and thus, the visible curtain rail board surfaces will be entirely laminated in a single application process. During this process, it is possible that the curtain rail board is kept in a stationary mode, while the laminating tapes that are rolled of supply rolls that are suspended above said curtain rail board, will be guided in an angled direction down toward said curtain rail board. This occurs under applied tension and in correlation with the position of the curtain rail board to be laminated. Herewith, said laminating tapes will be pressed onto said curtain rail board immediately at the moment of contact with said curtain rail

board, ensuring that the laminating tapes will adhere solidly to said curtain rail board surface immediately subsequent to the application of said tapes. By means of this process, it will be ensured that said curtain rail board could be used immediately without requiring a drying process that is necessary with the commonly utilized painting processes.

An apparatus is utilized for executing the process according to the invention that is characterized by means of a sled that moves relative to the surface of the curtain rail board that is to be treated, and that consists of a base plate that can be moved in a certain distance across the top surface of said curtain rail board, and that is equipped with guide brackets that are touching the opposing longitudinal sides of said curtain rail board. Herewith, said apparatus also possesses a pressure roller that is attached to the one end of the base plate, and that is utilized for the laminating tapes that are to be attached adhesively, and attached to the other end of said base plate are the covering tape supply rolls in such a manner that they can rotate. The laminating tapes that are run underneath said pressure roller will be attached to the surface of the rail by means of applied pressure of said pressure roller onto said rail surface, and said laminating tapes will be unrolled by means of the longitudinal movement of the sled. By means of one single movement across the longitudinal direction of the curtain rail board with the described sled, it is possible to laminate the top surface of the rail with the covering tapes. Herewith, an exactly timed guiding of said sled, and because of this, an exact application of the covering tape onto the top surface strip is possible, and it is also possible herewith to cover any desired length of curtain rail boards until the supply rolls are unwound entirely.

According to an advantageous execution example of the apparatus that is produced according to the invention, it is possible that a protruding guidance ring for at least one of the parallel proceeding curtain-gliding rails is present on the surface of the pressure roller. Herewith, said guiding ring has about the width of the curtain-gliding rail, and it will engage into said rail, and thus it will ensure an even more accurate tracking and alignment of said sled during the longitudinal movement of said sled and the unwinding of the covering tape thus resulting.

Furthermore, it is also possible that the sled will be run across the top surface of the curtain rail board with the support of a carrier roller that is attached to said sled at the opposite end to the pressure roller. Because of this arrangement, it can be ensured that the lower edges of said guidance brackets are not resting on top of the surface to which the curtain rail board is attached. Because of this arrangement, said sled will not be in contact with the top surface of the curtain rail board, but it will be guided in a similar manner, as this is the case with the sled end that is equipped with the pressure roller. Because of this arrangement, the movement resistance of said sled is further reduced.

It was finally found that it is of advantage to separate the guidance brackets at both sides of the longitudinal sides of the curtain rail boards into two separate sections of which at least the one section that is located at the one end of the base plate can be moved in relation to said base plate. Because of this arrangement, it would be possible to adapt the tilt angles of the laminating tapes

to the top surface of said curtain rail boards to certain work conditions by means of pulling the relevant sections of said guiding brackets apart, or pushing them together.

The invention will be explained in the following in more detail and with the support of the execution example that is depicted in the drawing. Displayed herewith is in:

Figure 1 a perspective view of the apparatus to be used for the treatment of the top surfaces of curtain rail boards, and in

Figure 2 a side view of the apparatus from figure 1.

The apparatus that is displayed in figure 1 is equipped with a sled 1 that in turn is equipped with a base plate 4 that can be moved across the top surface of the curtain rail board that is to be treated, and attached at the longitudinal sides 20 of said base plates are two each other opposing guidance brackets 5, 6, and 7, 8. The inner side surfaces of said guidance brackets that are directed toward the longitudinal sides 16 of the curtain rail board are in contact with said longitudinal sides in such a way, that they can slide along said sides. A pressure roll 17 is attached in such a manner that it can rotate on an axle 19 that is positioned in the brackets at one end of the base plate 4 between the guidance brackets 7, 8. Herewith, said pressure roller is in contact with the top surface of the curtain rail board. The guidance bracket pair 5, 6 that is positioned at the opposing end of the base plate is equipped with a longitudinal recess 23 (Fig. 2), in which a shaft 12 is located that can rotate, and that is to accept the supply rolls 9, 10 of the laminating tape. Said shaft is positioned toward the top surface of the curtain rail board in such a distance that the supply rolls 9, 10 cannot come in contact with the top surface. A carrier roller 11 that can rotate is located at the rear end of the guidance bracket pair 5, 6, and said carrier roller is utilized as a support carrier for said guidance bracket pair, and thus also for the base plate. Because of this arrangement, it is ensured that said base plate and the guidance brackets that are attached to it, and also the laminating tape supply rolls that are also supported by them can be rolled across the top surface of the curtain rail board 14 with the support of the pressure roller 17, and the carrier roller 11.
Herewith, the lower edges 24 of the guidance brackets will not touch the supporting surface onto which the curtain rail board 2 is attached.

However, there is also the possibility existing to equip the sled 1 with only pressure roller 17, and not to install the carrier roller 11, and thus causing the guidance brackets 5, 6 that are located at that side of the base plate that is opposing the side that is equipped with the pressure roller 17 to be in contact with their lower edges 24 with the surface that carries the curtain rail board. For this case, the sled can be moved into the longitudinal direction, however, herewith, a higher friction resistance has to be overcome, and said resistance is created by means of the contact of the lower edges 24 with the supporting surface.

The laminating tapes 3a and 3b that are unwound from the supply rolls 9, 10, and that are guided in parallel, are coated with an adhesive on their side that is directed toward the top surface of the curtain rail board, while the other side is colored, or equipped with a pattern in the desired manner. They are guided underneath the pressure roller 17, and are laid down by this action onto the top surface of the rail and pressed onto it. The laminating tapes are designed in such a manner that said tapes remain adhered to the top surface of said rails once they were pressed to it. The unwinding of the covering tapes from the supply rolls 9 and 10 occurs by itself through the means of moving the sled 1 forward across the curtain rail board top surface. This takes place because of the fact that during the movement of said sled into the direction of the arrow A that is displayed in figure 1, and also because of the hand pressure that is applied by means of pressing the guidance brackets 7, 8 down onto the covering tapes 3a and 3b, the pressure roller 17 creates a pulling force that is applied into the direction of the arrow B, and that thus causes that the tapes unwind from said supply rolls 9, 10 and it causes these rolls to rotate due to the unwinding action.

The curtain rail board that is displayed in figure 1 consists of aluminum, and it is created in the shape of a profile rail that is equipped with a groove 15 in the center of its top surface 14, which is projected to accept the curtain gliders, and located to the sides of said groove are the parallel surface strips 13 and 14. The utilized covering width is correlated with the width of said top surface strips 13 and 14. The sled displayed here is thus actually meant to be used for a single rail curtain rail board, however at any time it can be increased and utilized for the acceptance of further covering material supply rolls that can be placed next to each other onto the shaft 12, by means of relevantly increasing the width of the base plate 4 and the pressure roller 17. Herewith, the distance of the guidance brackets 5, 6, and 7, 8 that oppose each other, will be increased to match the relevant width, and it will thus be adapted to the width of curtain rail boards with several runner rails. It is also possible herewith, to attach a single guiding bracket to each side of said sled instead of the guiding brackets that are designed to be present in two pieces. The two piece guiding brackets have the advantage that their distance can be changed by means of loosening their attachment screws that are not displayed here, from the side surfaces of the base plate 4, and thus being able to move said brackets in their longitudinal holes that are also not displayed here, into the desired position. By means of this process, it is possible to change the application angle of the parallel covering tapes 3a, and 3b in relation to the top surface of the curtain rail board 14 for the case that this could be required during the unwinding process away from the supply rolls for the purpose of an easier attachment of the tapes onto the top surface of the curtain rail board that is positioned underneath said pressure roll 17.

In order to furthermore improve the directional adjustment of the laminating tapes 3a and 3b in relation to the proceeding of the top surface strips 13 and 14 of the curtain rail board 2, it is possible herewith to position a guidance ring 18 onto the top surface of said pressure roller 17. Said ring would have a width that about correlates with the slot width of the curtain run rail 15, and it would engage

into said curtain run rail, and it would thus ensure that an exact alignment of the covering tapes in relation to the top surface strips 13 and 14 is possible, even for the case that there is some play between the inner side surfaces of the guidance brackets and the longitudinal sides of the curtain rail board 16. The result of this arrangement would be that the edges of said covering tapes would lie exactly on the side edges of the top surface strips.

For the purpose of laminating the top surfaces 14 of said curtain rail board, it is possible to utilize plastic material tapes that consist of film material, and that are coated with an adhesive, and that are commonly available in the market place. Herewith, it is possible to select the color, and if so desired, also the pattern in such a manner that they match the desired room conditions, in which said curtain rail board 2 will be attached to the ceiling. It is common that the laminating of the curtain rail boards occurs in the manufacturing plant, but it is also possible herewith that, for example, curtain rail boards that are already in use, and that are installed to a room ceiling can be laminated herewith, and that said curtain rail boards can probably remain attached to said ceiling during the execution of the laminating process. Once the desired covering tape supply rolls have been inserted, and a length of tape is pulled away by hand and run underneath the pressure roller 17 for the purpose of initiating the laminating process of the curtain rail board, the sled is placed with the pressure roller 17 in such a manner onto the one end of the curtain rail board that the leading edges 22 are even with the frontal side of the rail edges. Subsequently, the sled will be moved forward by hand, while a light pressure is applied to the guidance brackets 6, 7, in order to press the pressure roller 17 onto the top surface of the covering tape, and causing this roll to unwind by means of this action. Because of this action, the covering tape 3a and 3b is unwound in a continuous fashion from the supply rolls, and it is applied to the top surface strips 13 and 14, respectively, it is attached to said strips by means of adhesion. Herewith, it is prevented by means of the lower edges 24 of the guidance brackets, as well as by means of the guidance ring 18 of the pressure roller 17 that the sled will get out of its aligned position with the curtain rail board 15. During this process, the base plate 4 is moved across the top surface of the curtain rail board 14 in a slight distance to said rail.

In this manner it is possible to unwind more than one laminating tape at the same time in dependence on the number of curtain run rails that are present in the curtain rail board, and also apply them during this process in a solid manner to said curtain rail board.

By means of slight modifications of the utilized fixture the novel process for the laminating of curtain rail boards can also be utilized for the laminating of the longitudinal sides 16 of said curtain rail boards for the case that this is desired, and for the case that these sides possess a smooth surface.

It is furthermore possible that the here-described process can be installed in a machine that is utilized for the production of such curtain rail boards. Herewith, the sled would be in a stationary position, while the curtain rail board would be moved and guided underneath it.

Patent Claims

1. A process for the surface treatment of curtain rail boards made of metal or similar material that encompass at least one curtain run rail, with which specifically the visible rail surface in which the curtain gliders are guided, and which is proceeding in parallel to the ceiling of a room, are smoothened and/or treated with paint, characterized in such a way that the top surface of said curtain rail board will be laminated with a covering tape that is coated with adhesive on one of its sides, and that is adhesively attached to said curtain rail board in a parallel fashion to the curtain run rails, or rail that are/is embedded in the curtain rail board onto the strip shaped top surfaces of said rail that are located to both sides of each curtain run rail, and with which the width of said covering tape is identical to the width of the top surface strips.
2. A process according to claim 1, characterized in such a way that the parallel proceeding to each other top surface strips that are separated from each other by means of at least one curtain run rail, will be laminated at the same time with the covering tapes.
3. A process according to claim 1 or 2, characterized in such a way that the covering tapes are wound from supply rolls that are positioned over the curtain rail board, and that they are guided down to it under a pretension condition and correlated with the plane to the top surface strips in an angular manner, and that they are pressed against said surface at the moment at which they are laid down onto the top surface strips.
4. A process according to claim 4, characterized in such a way that the supply rolls are run across the curtain rail board in its longitudinal direction, and that the curtain rail boards remain fixed in their place and position.
5. A process according to one of the claims 1 – 4, characterized in such a way that covering tapes are tapes that consist of plastic material, and that are commonly available in the marketplace, and that are coated on one of their sides with an adhesive, and that can be utilized in any desired color or pattern as long as they have the thickness of a film.
6. An apparatus for the execution of the process according to the claims 1 – 5, characterized by a moveable sled (1) that can be moved relative to the curtain rail board top surface (13, 14) that is to be treated, and that consists of a base plate (4) that can be moved across the top surface of the curtain rail board in a certain distance to it, and that is equipped with guidance brackets (5, 6, 7, 8) that are attached to its sides that are opposing the longitudinal sides of the curtain rail board (16), and that can slide along said sides, and with which said sled is also equipped with a pressure roller (17) that is attached to the one end of said base plate, and said pressure roller rolls across the top surface of said curtain rail board in order to press the covering tapes (3a, 3b) onto said curtain rail board, and with which supply rolls (9, 10) of said covering tape are located at the other side of said base plate in a manner that they can rotate, and from

which the covering tapes that are run underneath said pressure roller (17) can be wound off by means of the action of the applied pressure of said pressure roller onto the top surface of the curtain rail board (14) and the movement of said sled (1) into the longitudinal direction of the curtain rail boards.

7. An apparatus according to claim 6, characterized in such a way that the surface of the pressure roller (17) is equipped with a protruding guidance ring (18) for at least one of the parallel proceeding curtain run rails (15), and that has a width that is about the same as that of a curtain run rail, and that said guidance ring engages with said curtain run rail.

8. An apparatus according to claim 6, characterized in such a way that the covering tape supply rolls (9, 10) are located on a common shaft (12) that is inserted into a longitudinal recess (23) that is located in the guidance brackets (6, 5).

9. An apparatus according to claim 6, characterized in such a way that the guidance brackets (5, 6) at that end of the base plate that is located at the opposing side of the pressure roller (17), are connected with each other by means of the shaft of a carrier roller (17) that is located across from the longitudinal edge (16), and with which said roller can roll across the top surface of said curtain rail board (14).

10. An apparatus according to claim 6, characterized in such a way that the two each guidance brackets (5, 8; 6, 7) that are positioned in a certain distance to each other are positioned at each longitudinal side (16) of the curtain rail board, and with which the guidance brackets (8, 7) that are attached to one end of said base plate (4) hold the shaft (19) of the pressure roller (17), and with which the guidance brackets (5, 6) that are attached to the opposing end of the base plate, hold the shaft (12) of the covering tape supply rolls (9, 10).

11. An apparatus according to claim 10, characterized in such a way that the distance of the guidance brackets to each other, which are attached to the base plate (4) at each of the longitudinal sides (16) of the curtain rail board, can be adjusted in such a manner that the application angle of the covering tapes (3a, 3b) that are proceeding from the covering tape supply rolls (9, 10) to the pressure roller (17) can be adjusted in relation to the top surface of the curtain rail board (14).

12. An apparatus according to claim 6, characterized in such a way that the lower edges (24) of the individual guidance brackets (5, 6, 7, 8) are positioned a certain distance away from the lower edges of the longitudinal sides of the curtain rail boards (16).

Translated by:
Dietmar Schlei
(715)386-5779
(651) 736-2057